



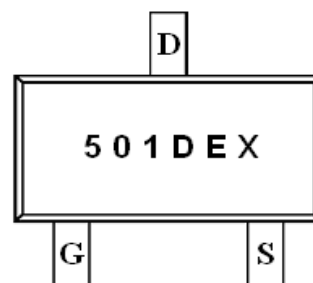
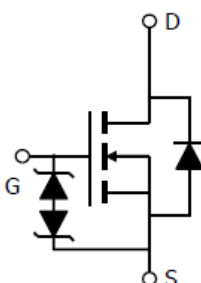
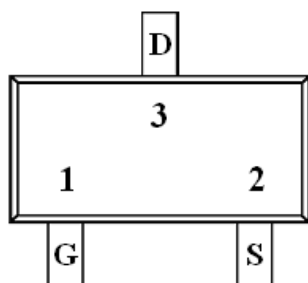
General Description

AFN501DEA is an N-channel depletion-mode Power MOSFET which is produced using VDMOS technology. The improved planar stripe cell have been especially tailored to minimize on-state resistance, provide superior switching performance.

Features

- 600V/16mA, $R_{DS(ON)}=700\Omega@V_{GS}=10V$
- 600V/3mA, $R_{DS(ON)}=700\Omega@V_{GS}=4.5V$
- Depletion-mode (Normally-on)
- Improved ESD ability Fast switching
- Improved dv/dt capability
- SOT-23 package design

Pin Description (SOT-23)



Application

- Desk PC Power Supply
- AC adapter
- LCD TC Power Supply

Pin Define

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN501DEAS23RG	501DEX	SOT-23	Tape & Reel	3000 EA

※ 501DE Parts Code

※ X Monthly Code

※ AFN501DEAS23RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	600	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	30	mA
		27	
Pulsed Drain Current	I _{DM}	120	mA
Continuous Source Current	I _S	30	mA
Power Dissipation	P _D	0.5	W
Power Dissipation Derate		0.004	W/°C
Operating Junction Temperature	T _J	-55/150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Case	R _{θJC}	50	°C/W
Thermal Resistance-Junction to Ambient	R _{θJA}	250	°C/W

Electrical Characteristics

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =-5V, I _D =250μA	600			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =3V, I _D =8μA	-2.7		-1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	μA
Drain-Source Leakage Current	I _{D(off)}	V _{DS} =600V, V _{GS} =-5V			0.1	μA
On-state drain current	I _{DSS}	V _{GS} =0V, V _{DS} =25V	12			mA
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =16mA		310	700	Ω
		V _{GS} =0V, I _D =3mA		330	700	
Diode Forward Voltage	V _{SD}	I _S =16mA, V _{GS} =-5V		0.85	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =400V, V _{GS} =-5V to 5V			1.8	nC
Gate-Source Charge	Q _{gs}	I _D ≅0.01A			0.75	
Gate-Drain Charge	Q _{gd}	(Note 1,2)			0.56	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =-5V			99	pF
Output Capacitance	C _{oss}	f=1MHz			9.1	
Reverse Transfer Capacitance	C _{rss}				5	
Turn-On Time	t _{d(on)}	V _{DD} =300V			18	ns
	t _r	I _D ≅0.01A, V _{GEN} =-5...7V			90	
Turn-Off Time	t _{d(off)}	R _G =6Ω			93	
	t _f	(Note 1,2)			210	

Notes:

1. Pulse Test: Pulse width ≤300μs, Duty cycle≤2%
2. Essentially independent of operating temperature



Typical Characteristics

Figure 1. On-Region Characteristics

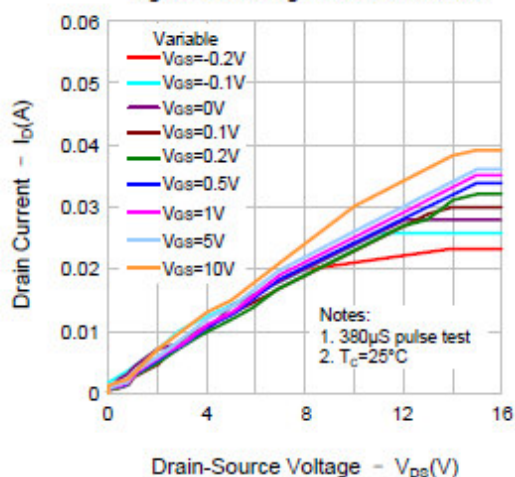


Figure 2. Transfer Characteristics

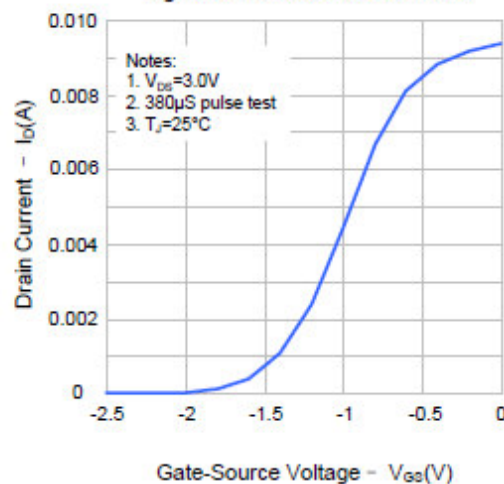


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

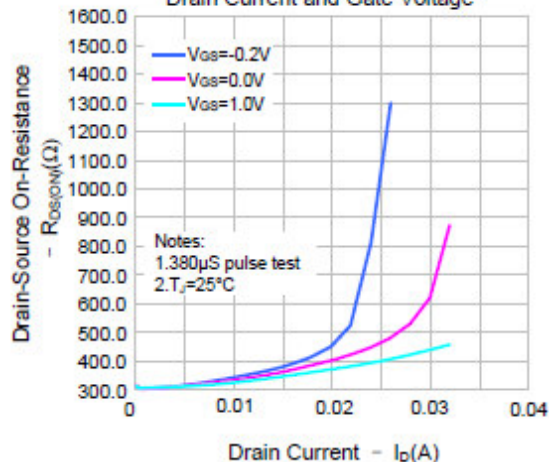


Figure 4. Forward characteristics of reverse diode

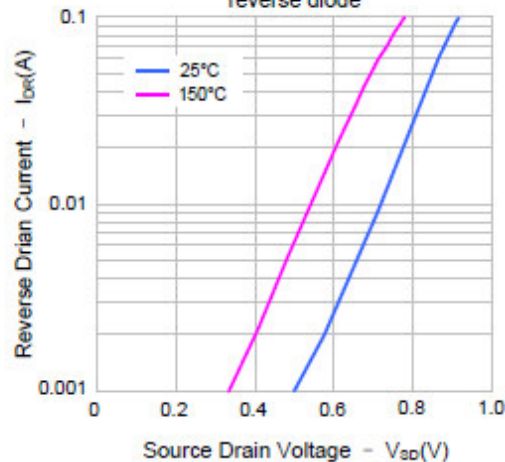


Figure 5. Breakdown Voltage Variation vs. Temperature

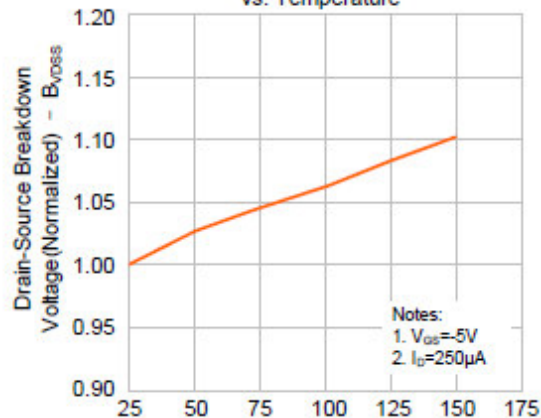
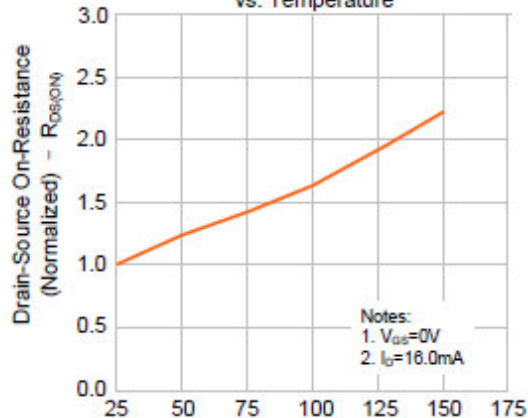
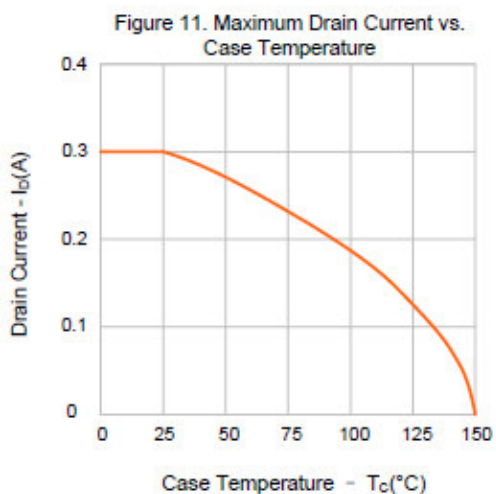
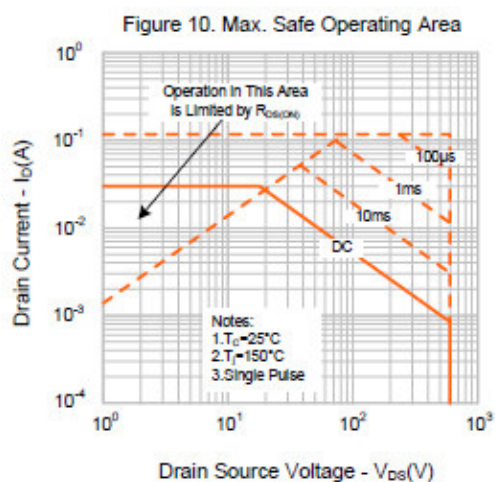
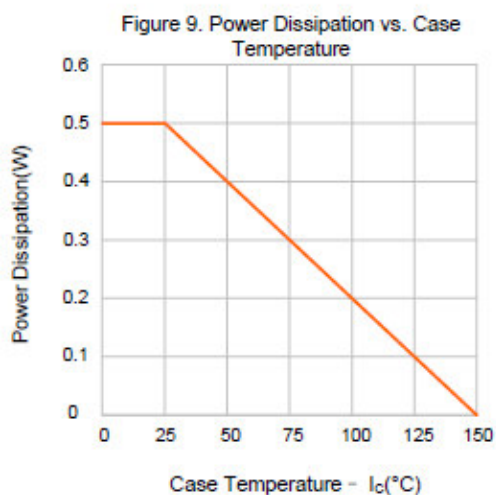
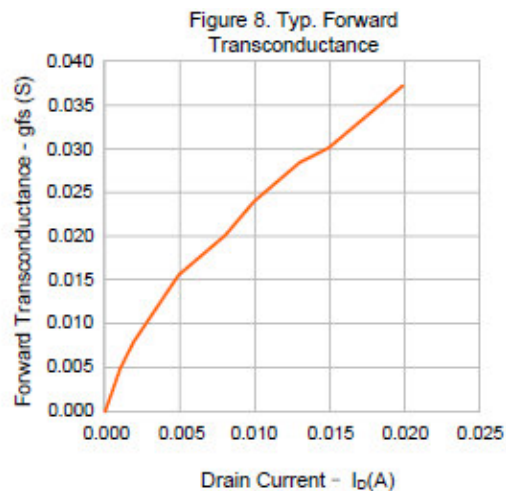
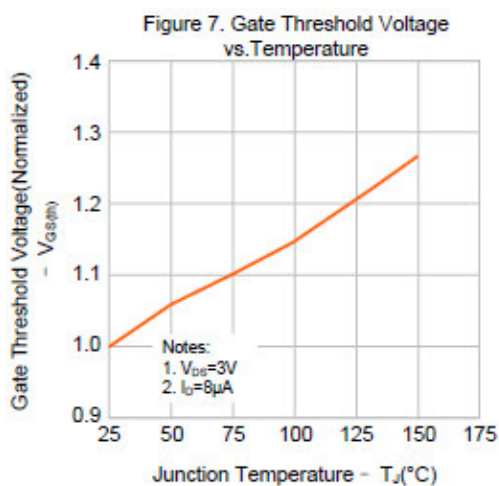


Figure 6. On-resistance Variation vs. Temperature



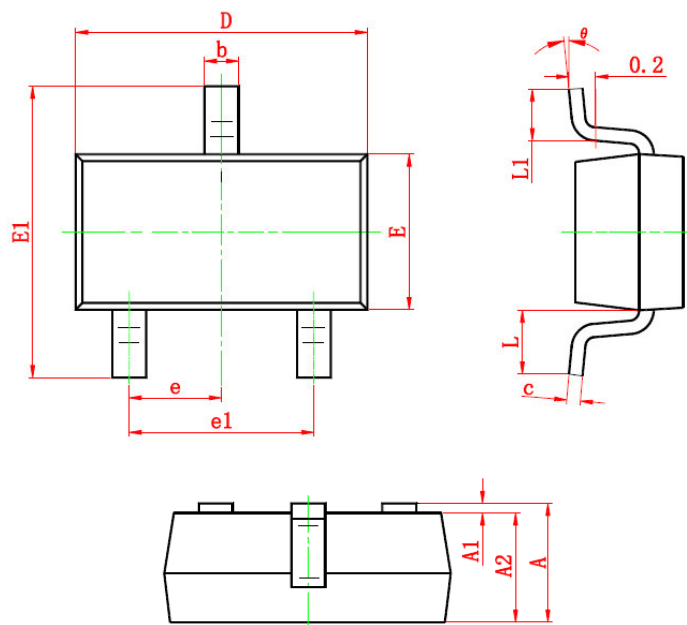


Typical Characteristics





Package Information (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

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